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Georgia State College of Agriculture

Andrew M. Soule, President

Extension Division

J. Phil Campbell, Director

Athens, Ga.

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Co-operative Extension Work in Horticulture and Home Economics, Georgia State College of Agriculture and United States Department of Agriculture co-operating.

Home Grown Food Stuffs for Georgia

John R. Fain, Professor of Agronomy

Concentrates.

Corn. The great concentrate used for live stock in America is corn. It has not been used extensively in Georgia except for work stock because the price has been too high. Georgia is not even growing a sufficient quantity of corn to supply the present demand. Neither can this state grow a great deal of corn until it builds the soil to the point where it will produce more than an average of 15 to 16 bushels per acre, which yield about pays expenses.

From work carried on the last few years at the College it is indicated that corn does not respond as well to commercial fertilizers as cotton. Putting the land in better physical condition and increasing the organic matter through the use of green manures is the best method for increasing corn production. Lack of water is probably more often the limiting factor than any other one thing. This can be remedied by improving the physical condition and increasing the organic matter of the soil.

Such a varied climatic and soil condition exists in the state that it is necessary to adapt varieties to local conditions. Therefore, varieties that have been grown in a community for a long time are usually the best ones. Systematic seed selection must be practiced to get the best results. At present seed should be selected for increased yields and weevil resistance.

Oats. Winter oats of the rust-proof type are well adapted to southern conditions. As a cover crop they protect the land from erosion and leaching, and are a most desirable food for growing animals and for work stock. With this crop, however, as with corn, Georgia has not yet met home demands. Most of the oats produced have been sold for seed, and seed prices are too high to pay for food stuff. Not until the crop is increased sufficiently either by greater acreage or larger yields, will it be profitable to utilize it for food stuff.

The biggest factor found by the College influencing the production of oats is the time of seeding. In the latitude of the College, October 15th seems to be the best time for seeding. An average of two years shows a difference of over 19 bushels per acre when seeded October 15th over those seeded under the same conditions November 15th. It has also been found that discing corn land, where the corn has been cut and shocked, is just as satisfactory as plowing, taking considerably less time and money.

The method of seeding has been compared for four years. Seeded about October 15th the common seed drill has given about a bushel more per acre than the open furrow.

Oats, like corn, do not seem to respond so readily to commercial fertilizers as they do to general soil building. Until the livestock industry grows to sufficient extent to furnish manure, green crops will have to be used in building the humus content of the soil.

Kaffir Corn. Kaffir corn is used in some sections of the country in place of Indian corn. There are very few places in the state where Kaffir corn will have an advantage over Indian corn. It is more drought resistant and possibly on some of the coarser sandy soils where Indian corn will suffer from drought, Kaffir corn may be substituted. It will take something like 110 pounds of Kaffir corn to equal 100 pounds of corn.

Grazing for Swine

Probably the greatest opportunity in livestock in the state today is in hog production, especially where hogs are finished off on grazing crops such as cowpeas, soy beans and peanuts. Grazing has the double advantage of bringing in a revenue and increasing the crop-producing power of the soil at the same time. On the sandier lands unquestionably the peanut is the best crop, but it is possible that the drought resisting power of the soy bean may make it desirable on some of the coarser sands of fair crop-producing power. On heavier lands, cowpeas and soy beans will have to be resorted to. As a little better grade of land is required for soy beans than for cowpeas it will be best to grow cowpeas on thinner soils. Where soil is reasonably good soy beans are to be preferred, the yield of grain being larger and the grain itself richer in protein and oils than cowpeas. On good land soy beans should give from 100 to 200 pounds more pork per acre than cowpeas.

Hay

With hay, as with corn and oats, Georgia does not produce sufficient to meet home demands. About one quarter of the hay consumed in the state is brought in from other sections. While hay cannot be produced with the same crops or by the same methods used in other sections, yet a plentiful supply can be produced economically. At the present time the average hay yield is a little higher in this state than in any other section of the country. The biggest drawback is that most of our hay crops are annuals, but by a more

careful study of the requirements of the different soil types we can undoubtedly reduce the cost of production.

Cereals are now utilized for hay more than any other crop in the state: Of the cereals oats are preferable as they produce a good tonnage and give a superior quality of hay. Under some conditions wheat will give a little better tonnage, but the quality will not be better. In utilizing wheat for hay, a beardless variety should be selected. Either Poole's or Leap's Prolific will make a good yield. A combination of oats and wheat is often desirable, especially where there is a possibility of the oats being winter killed. Vetch with the cereals will improve the quality of the hay. Hairy vetch is desirable for the northern part of the state and the Oregon vetch in the southern. The two can be mixed equal parts for middle Georgia. Rye will come nearer growing in the state under all conditions than either wheat or oats. It gives a good tonnage but the quality of hay is rather inferior. Vetch or crimson clover, or both, should be mixed with rye to improve the quality. Half a bushel of rye, 10 pounds of vetch and 5 to 8 pounds of crimson clover will make a good combination either for pasture or for hay. In the extreme southern part of the state Canadian field peas can be sown with cereals. In the latitude of Athens Canadian field peas and spring oats can be seeded early in March, when there has been a failure of the fall crop.

Grasses that can be utilized for hay in the state are few. The usual combination of Timothy, Red Top and clover is only adapted to the bottom lands of the northwestern part of the state and the higher valleys of the northeastern part of the state. For middle Georgia a combination of tall oat and orchard grass can be utilized. One of the difficulties in middle Georgia is securing a stand. There is a tendency for soils in that section to form a crust that is almost impossible for the fine grass to penetrate. It will be found desirable in most sections to seed these grasses in January or February when the ground is fairly moist and the crust does not interfere so seriously.

To produce a profitable hay crop from these grasses the land will have to be put in excellent condition. It is not worth while to seed them on worn-out cotton land. Two grasses adapted to practically all of the state are Johnson grass and Bermuda grass. Johnson grass can be eliminated as being undesirable on account of the difficulty of controlling it.

Bermuda grass can only be utilized as a hay crop on the better soils. On poor soils it does not make sufficient growth. A number of bottoms along streams subject to erosion can be utilized for Bermuda grass hay. Over a ton and a half of hay per season can be obtained from such lands.

A good deal has been said about Sudan grass, and it evidently has a place as a hay-producing plant in southern agriculture. When the seed becomes cheap enough to seed broadcast it will be utilized

more. At present it does not appear to be superior to sorghum when seeded in rows.

Rhodes grass gives some promise for the southern part of the state. It is a perennial, consequently, can be produced somewhat cheaper than hay from annuals. It is in the experimental stage and should be seeded to begin with, only in a small way. Dallas grass has been utilized to a limited extent and should be used wherever it is found growing naturally. In curing, the grass turns dark making it an undesirable market hay. Sprouting crab grass is being utilized to a limited extent and some reports indicate good yields. This will probably be utilized only in the southern part of the state. It is an annual, but the seed can be produced reasonably cheap and without a great deal of trouble.

Legume Hays

For the leguminous crops most of the soil in the state will have to be limed. As much as 1400 pounds of hay increase per acre has been secured from liming cowpeas. While this amount of increase will not be had from all soil types some increase should be expected from most of the legumes. Crops like cowpeas rarely need to be inoculated, but plants like vetch and alfalfa usually have to be inoculated to be grown successfully.

One of the problems in the production of leguminous hays is curing with little loss of leaves. In most cases this means curing in the shock. Legume hay should be allowed to remain in the swath until just before the leaves get brittle. It should then be put in the windrows and left as long as possible without too great a loss of leaves when it is handled. It will probably then be necessary to complete the curing in the shock. Hay caps are a necessity in most cases where curing the hay is completed in the shock.

Cowpeas and Soy Beans

Cowpeas either by themselves or in combination with other crops, have been for some time the main dependence for leguminous hay in this state. Consequently, it is not necessary to say very much about them. The Iron cowpea seeded in the fall with the oats in southern Georgia seems to stand the winter and are up and ready for growth when the oats are harvested in the spring. A modification of this practice is to seed the peas in March just before the growth of oats starts, using a spring pressure disc drill. This does not seem to hurt the oats. This practice, however, will only be successful on land that is fairly free from weeds, especially the rag weed. As soy beans are drought resisting they are more dependable than cowpeas. In the last few years dry summers have reduced the yield of cowpeas on the demonstration field at the College as low as a half ton per acre with most varieties, but has not affected the soy beans to any great extent. Usually soy beans will give greater yields than cowpeas. The hay is somewhat coarser, consequently, there is more waste in feeding. At present the Col-

lege is not prepared to recommend any of the other varieties over the late or Mammoth Yellow. It should be kept in mind, however, that the soy beans will only give good results on land that is at least in fair condition.

In the southern part of the state the beggar weed can be utilized as a hay crop. There is a possibility, however, that if allowed to go to seed it will become a pest. The time of cutting is about the time it begins to bloom. Two crops can usually be secured each year. The second crop will probably contain a considerable amount of crab grass.

Clovers

Of the clovers probably alsike is the one that can be best utilized for hay. It is especially adapted to moist alluvial lands. While it will grow on the uplands they will have to be in good condition. Red clover is used to a limited extent but on account of fungous diseases it cannot be successfully grown unless immune seed are secured. There is a natural growth of red clover over most of the central and northern parts of the state from which immune seed can be secured. It will take considerable trouble and time, however, to secure a sufficient amount to get the work started. Stable manure and lime will help materially in establishing a stand of clover. Neither crimson nor bur clover make a first-class hay. Crimson is to be preferred to the bur. In both cases they should be cut rather early to secure the best quality. Lespedeza, or Japan clover, gives a good quality of hay but can only be utilized on the better grade of land. On the thin land it does not make sufficient growth.

Alfalfa

Alfalfa is undoubtedly one of the best forage plants in the United States. The two biggest problems in alfalfa production is securing a stand and holding it after it is secured. The stand depends upon inoculation, liming and physical condition of the soil. To hold a stand keep the crab grass eliminated and the plant vigorous enough to withstand hot rainy weather. From four to six cuttings per year can be secured in the state. The yields for the past three years at the College have varied from $4\frac{3}{4}$ to $6\frac{1}{2}$ tons per acre. Those interested in alfalfa production should write the College for the circular on alfalfa.

Forage Crops

Sorghum

Of the various forage crops produced in the state everything considered, sorghum is probably the best. It will give a good tonnage under practically all of the conditions in the state and its value as a forage is good. The cost of the seed is reasonable. It is relished by all classes of livestock and all thrive on it. It has the ability to go through drought and when the rains come, to produce a fair

tonnage. It is grown both broadcast and in rows. Both have their advantage. A larger tonnage but rather coarser forage can be produced in rows. Where cattle are to be fed in the open, growing it in rows, cutting and shocking in the field and feeding direct from the shock is a good practice. Where it has to be fed from the barn or baled it is better to seed broadcast.

Corn Stover

It is worth while to cut and shock corn. This gives a maximum amount of forage for labor expended, and gets the corn crop out of the way of the succeeding grain crop. Corn stover can be fed in the open on the pasture, an excellent method of increasing the productivity of the pasture.

Where there is livestock production worthy of the name, the practice of stripping the blades from the corn is usually discontinued, because there is not sufficient feed obtained for the labor expended. Besides, the yield of corn is reduced by the practice.

As livestock production increases, utilization of straw and stover with succulent crops like silage will come more and more into practice. A semi-silage is now being made in many parts of the country from corn stover. It is put into the silo after the corn has been removed and a sufficient amount of water added to cause it to pack. This softens up the stalks and cattle seem to thrive on this food stuff.

Japanese cane is being used to a limited extent for forage. For the southern part of the state it may have some advantage. One planting will last for several years. However, the difficulty in harvesting and the extra hard outer covering will probably prevent this plant becoming a rival of sorghum.

Pasturage

The pasture can be divided into three kinds, permanent, those in rotation, and annual pastures. The number of grasses that will meet all the conditions necessary for pasture are rather limited in the south. One of the first things necessary is to study the native grasses and do everything possible to encourage the growth of such as are acceptable to the livestock. One of the first changes that will be necessary in the state is to quit the practice of burning off the pastures, thus killing seed of annual grasses that are of value. Mowing is preferable.

Of the native grasses, the various species of the *paspulums* are probably of greatest value. Such kinds as the Dallas and carpet grass are coming into cultivation and the seed is now on the market. A great many other species in the state are valuable as pasture grass and can be increased.

Bermuda Grass

Bermuda grass will probably always be the basis of any permanent pasture. This combined with Japanese clover for summer grazing, gives good results. The Bermuda grazing season, however, is rather short and it can be supplemented by rescue grass and bur clover for fall, winter and early spring grazing. Japanese and bur clover are both annuals but will reseed themselves under usual pasture conditions. Rescue grass is also an annual. Texas blue grass can be combined with the Bermuda grass to fair advantage on some of the heavier soil types. The objection to this grass is that it has to be propagated by slips and given some time to establish itself before cattle are grazed on it. In many sections of the southern part of the state is a natural sod of carpet grass. This is probably the best grass that can be utilized for that section. The varieties suggested to be combined with Bermuda grass can also be combined to good advantage with the carpet grass. While this grass is usually considered of value only to the southern part of the state, recently a specimen has been sent to the College from Elbert county showing an excellent growth. It may be possible that this will be of value further north than is now supposed.

In any permanent pasture, as many different species of *paspulum* should be encouraged as are found growing in the section. On some of the moist soils, red top can be utilized to advantage either in combination with the *paspulum* or by itself. The only grasses that can be recommended at this time to form part of a rotation are orchard and tall oat grass. These two grasses have a wide range of adaptability, but are probably better adapted to the northern part of the state than the southern.

For annual pasturage, early seeded cover crops composed of a mixture of the cereals with bur and crimson clover are desirable. Crops of this kind, however, usually make rather expensive pasturage and only where they can be combined for the protection of the land will it be profitable to utilize them. Hogs do fairly well on vetch but cattle do not seem to relish the vetch in pastures although they eat it readily as a hay. If the seed of rye grass are produced on the farm they can be utilized for annual pastures, but if they have to be bought each year it will make the pasture rather expensive.

The velvet bean is one of the crops that gives a great deal of promise for annual pasture, especially where the cattle are to be carried through the winter as cheaply as possible and simply kept in a thrifty, growing condition. This crop should be greatly extended for this purpose not only because of its value as a pasture crop but just as much because of its soil-building properties. For the southern part of the state this gives an opportunity for carrying the animals through the winter cheaply and at the same time increasing the crop-producing power of the land for other crops.

Silage Crops

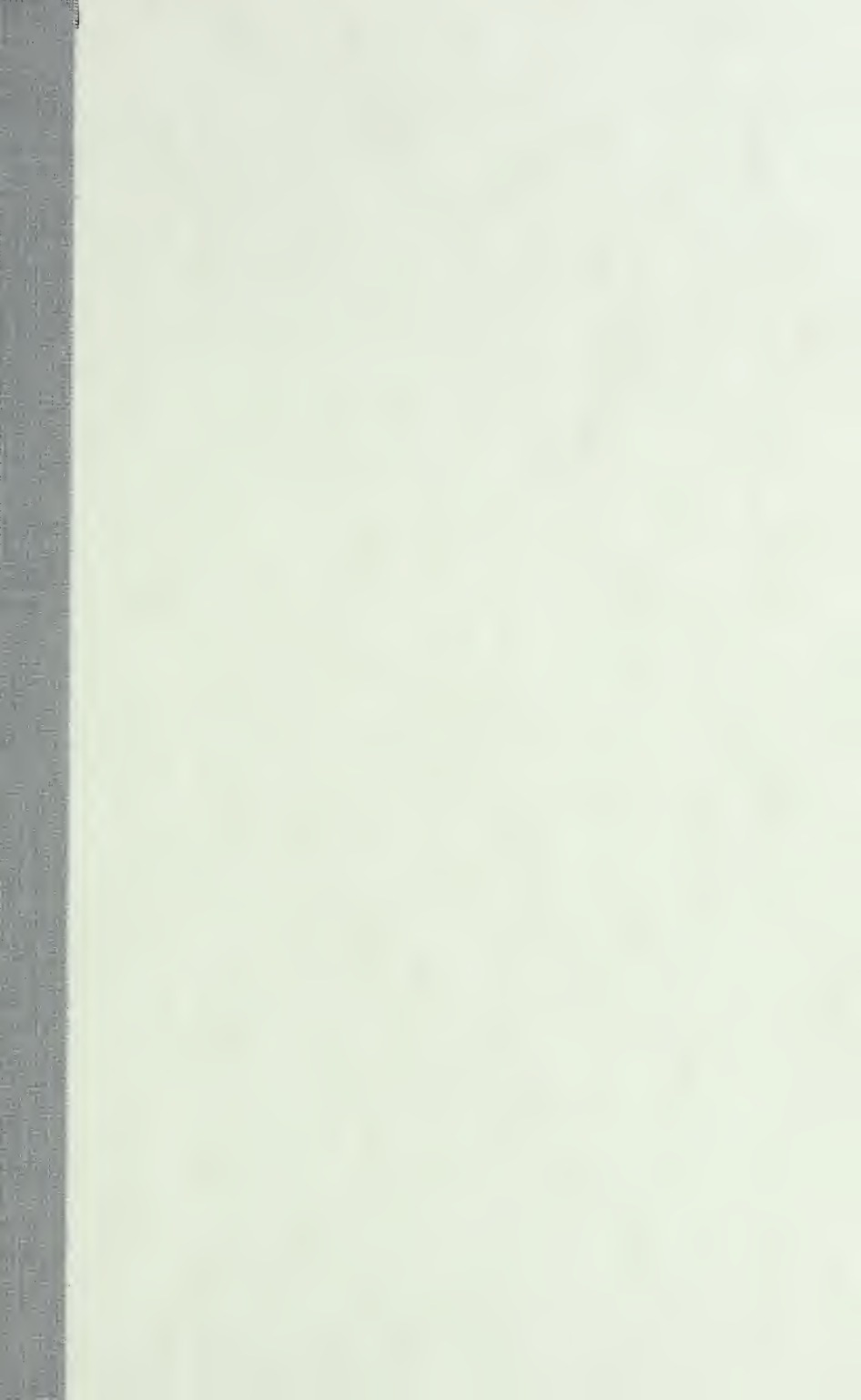
Silage crops will probably be the basis of any cattle industry that amounts to anything in the south. There are a number of reasons for this, a principal one being that southern conditions are adapted to the production of large quantities of coarse forage.

No other means of winter feeding will enable the farmer to carry so many animals as silage. It is also a most excellent food stuff and all classes of cattle thrive on it. It is by all odds the best food stuff to combine with the South's most available concentrate, cottonseed meal.

The two crops that stand out preëminently for silage production are corn and sorghum. As a general proposition sorghum will give considerably more tonnage than corn, but the quality of silage is not quite as good. Corn alone, however, often fires badly just about the time it is ready to go into the silo, and for this reason it does not make the best quality of silage. A combination of corn and sorghum gives an excellent quality and a fair tonnage. In planting the two crops it is well to alternate the rows, or possibly put in two rows of one and two rows of the other. The corn and sorghum can then be mixed in loading and in feeding to the cutter.

Kaffir corn may be substituted for corn in many sections where corn fires too badly on account of the thick planting necessary to get tonnage for silage. Kaffir corn is a drought resistant plant, does not fire badly, is not as juicy as the sorghum and combined with the sorghum, helps to improve the quality.

Legumes should not be put in the silo by themselves. The quality of the silage produced by legumes is not as good as corn or sorghum and it is especially undesirable for dairy cattle on account of the odor. Mixed in small quantities with corn and sorghum they do very well. It is usually better to grow legumes as hay and have them supplement corn and sorghum silage than it is to attempt to grow them with these crops and put them in the silo.



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